

## A revision of the Australian species of *Eclipta* (Asteraceae: Ecliptinae), with discussion of extra-Australian taxa

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### Abstract

Orchard, A.E. & Cross, E.W. A revision of the Australian species of *Eclipta* (Asteraceae: Ecliptinae), with discussion of extra-Australian taxa. *Nuytsia* 23: 43–62 (2013). The genus *Eclipta* L., of six species, is native to South America and Australia, with one species, *E. prostrata* (L.) L., a pantropical and warm temperate weed. The number of taxa currently recognised in the genus is discussed. The Australian taxa, comprising three species and two subspecies (*E. prostrata*, *E. alatocarpa* Melville and *E. platyglossa* F.Muell. subsp. *platyglossa* and subsp. *borealis* E.W.Cross & Orchard, *subsp. nov.*) have been studied morphologically across their full range. A lectotype is chosen for *E. platyglossa*. All Australian taxa are keyed, described, illustrated and mapped, and extra-Australian taxa are keyed and described, and most illustrated.

### Introduction

In 2004 the late Ed Cross commenced a revision of the Heliantheae Cass. alliance and the Eupatorieae Cass. for *Flora of Australia*, beginning with Heliantheae subtribe Ecliptinae Less., especially the genera *Eclipta* L., *Wedelia* Jacq. and *Pentalepis* F.Muell. He had made good progress with several parts of this study, until his tragically early death in 2007 left the study incomplete. The present senior author was engaged by the Australian Biological Resources Study (ABRS) in 2010 to edit and complete the *Flora* manuscripts. This paper presents the results of that revision, in respect to the genus *Eclipta*. The taxa recognised are essentially those drafted by Cross, although the senior author has modified the circumscription of the subspecies of *E. platyglossa* F.Muell. somewhat, and examined and discussed overseas material to put the Australian species in context.

### Size of the genus *Eclipta*

The genus *Eclipta* was described by Linnaeus (1771: 159), with three species (1771: 286), *E. erecta* L. (based on *Verbesina alba* L.), *E. prostrata* L. (based on *Verbesina prostrata* L.) and *E. punctata* L. (based on *Bellis ramosa* Jacq.). As the name *Verbesina alba* was cited in the synonymy of *E. erecta*, the latter name is illegitimate. The legitimate name for this entity is *E. alba* (L.) Hassk. Similarly, as the name *Bellis ramosa* Jacq. was cited in the synonymy of *E. punctata*, *E. punctata* is illegitimate as well. Subsequently Roxburgh (1832) united *E. alba* and *E. prostrata* under the latter name. He also suggested that *E. punctata* was conspecific, although not formally including it in synonymy.

In the following 180 years many other names (both new names and recombinations) have been proposed in *Eclipta*, the overwhelming majority being later shown to be local variants of *E. prostrata*, which is now known as a pantropical and warm temperate weed. This species, as *E. erecta* L., *nom. illeg.* (*Verbesina alba* L.; *E. alba* (L.) Hassk.) is also the conserved type of the genus. A very few additional taxa are still accepted as distinct species, although in the absence of a global monograph, the status of some is problematical. The consensus in works over the last century (Reiche & Philippi 1903; Arechavaleta 1906; Cabrera 1963; Aristeguieta 1964; D'Arcy 1975; Nash 1976; Jessop 1981; Hilliard 1977; Cooke 1986; Stanley 1986; Murray 1992; Lawrence 1992; Jeanes 1999; Robinson 2006; Strother 2006; Panero 2007; Hu 2009) has been that the genus comprises three, four or five species, although some claim perhaps only one (Wagner *et al.* 1999), others six or more (Dunlop 2000) or even up to 15 (Smith 1991).

In the only recent conspectus of the genus as a whole (*Global Compositae Checklist* (GCC), Flann 2009–) ten species of *Eclipta* were listed as being accepted. This seems an overestimate. A total of six is adopted here. The species recognised in the *Global Compositae Checklist*, their reported distribution, and other opinions on their acceptance, are as follows:

### ***Eclipta alatocarpa* Melville**

Endemic to Australia (GCC).

*Status.* Accepted in the current paper.

### ***Eclipta brachypoda* Michx.**

Recorded from Bolivia by GCC. However, the same work lists it as an illegitimate name (*Amellus caroliniana* Walter cited as synonym). The taxon was subsequently legitimately described as *Eclipta erecta* var. *brachypoda* Torr. & A.Gray. GCC notes that three recent works consider it synonymous with *E. prostrata*.

*Status.* Not accepted in the current paper.

### ***Eclipta elliptica* DC.**

Recorded for Brazil, Uruguay, Paraguay, Argentina and Chile by GCC. It is accepted for Uruguay (Arechavaleta 1906), Chile (Reiche & Philippi 1903) and Argentina (Zuloaga & Morrone 1999, who also list it for Brazil and Uruguay). There is a description and illustration in Arechavaleta (1906: 319). It is included in *Lista de Espécies Flora do Brasil 2010* (<http://floradobrasil.jbrj.gov.br/2010/>, accessed 5 December 2011) as native but not endemic to Brazil. Blake (1930) listed *E. elliptica* DC. as a synonym of *E. bellidioides* (Spreng.) Schultz-Bip., but this seems to be an error. *Eclipta elliptica* is a plant with elliptical leaves and small white ligules (see above). *Eclipta bellidioides* (based on *Jaegeria bellidioides* Spreng.) is a quite different plant, with yellow ray corollas, and is now considered synonymous with *Jaegeria hirta* (Lag.) Less. (Zuloaga *et al.* 2008; N. Hind pers. comm.). Blake also listed *Wollastonia prostrata* DC. as a synonym of *E. bellidioides*, but the type of this name (Brazil, Prov. Rio Grande, *C. Gaudichaud s.n.*, 1833 (Herbier Imperial du Bresil 1073), P 710030 (photo!)) matches *E. elliptica*, not *J. hirta*. Zuloaga *et al.* (2008) place *Wollastonia prostrata* DC. as a synonym of *E. elliptica*.

*Status.* Accepted in the current paper.

***Eclipta leiocarpa* Cuatrec.**

Recorded from Colombia by GCC, on the basis of its original description, and inclusion in the unpublished Govaerts World Compositae Checklist A-G held at K. The holotype (F 49427F) and isotype (COL 4912) specimens are available for viewing on JSTOR. I have seen no other material. The plant is described as an hygrophilous herb; leaves lanceolate (some almost narrowly ovate), attenuate at base, 10 cm long, 3.5 cm wide, coarsely serrate; involucre of broadly ovate to ovate-oblong bracts which are prominently 9-nerved; achenes grey, oblong, quadrangular and moderately compressed, shortly ciliate at apex, otherwise glabrous and smooth. In these characters *E. leiocarpa* differs from other South American (and Australian) species. Acceptance of the name *E. leiocarpa* other than in the protologue description has not been traced. The type material might represent immature *E. prostrata*, but seems distinct in a number of respects.

*Status.* Accepted in the current paper.

***Eclipta megapotamica* (Spreng.) Sch.Bip. ex S.F.Blake**

Recorded from Brazil, Uruguay, Paraguay, Argentina and Chile by GCC, on the basis of inclusion in the unpublished Govaerts World Compositae Checklist A-G held at K. This species is perennial, with lanceolate leaves 5–6 cm long, entire, and achenes which are winged, compressed, *c.* 5 mm long, with relatively long awns (*c.* 1 mm). The wings of the achenes are not fused into a cup at the apex (castellated), as in *E. alatocarpa*, and are narrower, and the achene body is almost smooth, not moderately warty as in *E. alatocarpa*. It is described and illustrated in Cabrera (1963: 200, 203, Figure 57A–C), where it is recorded from Brazil, Uruguay and northeastern Argentina near the River Plate. It is listed in Zuloaga *et al.* (2008) as native to Argentina, Brazil and Uruguay, and in *Lista de Espécies Flora do Brasil 2010* (<http://floradobrasil.jbrj.gov.br/2010/>, accessed 5 December 2011) as native but not endemic to Brazil (*vide* C.A. Mondin).

*Status.* Accepted in the current paper.

***Eclipta paludicola* Steud.**

The name *E. paludicola* Steud., described as an annual species from Brazil, was based on ‘*E. palustris* Arrab.’ [D. Francisco Antonio de Arrábida, 1771–1850]. No publication by Arrábida including this name has been traced, suggesting that this was just a manuscript name. *Eclipta paludicola* is recorded from southern Brazil according to GCC, but is not included in *Lista de Espécies Flora do Brasil 2010* (<http://floradobrasil.jbrj.gov.br/2010/>, accessed 5 December 2011), nor in Zuloaga *et al.* (2008). Material housed under this name in P (Antigua, *L.A. Richard s.n.*, P 2534355 & 2534353 (ex Herb. Cosson); Guadeloupe, *L.A. Richard s.n.*, P 2534354; Sta Cruz, *L.A. Richard s.n.*, P 2534356) all seems to be *E. prostrata*.

*Status.* Not accepted in the current paper.

***Eclipta platyglossa* F.Muell.**

Endemic to Australia (GCC).

*Status.* Accepted in the current paper.

**Eclipta prostrata** (L.) L.

Widespread in tropical and warm temperate regions, including Australia (GCC).

*Status.* Accepted in the current paper.

**Eclipta punctata** Jacq. / **Eclipta punctata** L.

The name *E. punctata* L. (Mant. Pl. 286 (1771)) was based on *Bellis ramosa* Jacq., Enum. Syst. Pl. 28 (1760) (cited by Linnaeus as ‘Jacq. amer. 216, t. 129’ – see TL-2 for discussion of the relationship between Jacquin’s *Enum. Syst. Pl.* (1760) and *Select. Stirp. Amer. Hist.* (1763)). The name *E. punctata* L. is thus illegitimate. GCC cited ‘*Eclipta punctata* Jacq. *Select. Stirp. Amer. Hist.* 216, t. 129 (1763)’ as an accepted name. This combination is not made in the text nor on the plate as cited, and the combination seems not to have been made by this author. Jacquin’s species (*B. ramosa*) came from ‘Domingo and Martinica’ (San Domingo and Martinique), and was originally described skeletally as ‘*Bellis ramosa caule ramoso*. ☉ [=annual]’. It appears from the plate to be *E. prostrata*.

*Status.* Not accepted in the current paper.

**Eclipta pusilla** M.E.Jones

Recorded from north-western Mexico by GCC, on the basis of inclusion in the unpublished Govaerts World Compositae Checklist A-G held at K. This is an illegitimate later homonym of *E. pusilla* (Poir.) DC. (*Verbesina pusilla* Poir.), a plant from Puerto Rico, accepted by Candolle with doubt as to its identity. A specimen in P (Puerto Rico, no collector or date, (P 2534334 photo!)), annotated as *V. pusilla* Poir. and *E. pusilla* DC. (?type material), is *Spilanthes iodescaea* A.H.Moore (det. Blake, 1925). A second sheet (P 2534333 photo!) is a probable duplicate. *Eclipta pusilla* M.E.Jones was described from Mexico, ‘Arroyo Undo, Baja California Norte’. McVaugh (1984) recognised only *E. prostrata* from western Mexico, and stated that this was the only species of *Eclipta* in North America. The description of *E. pusilla* M.E.Jones in any case seems unlikely to be that of an *Eclipta* (‘Involucre a single piece but 5-toothed and with hyaline edges lacerate...Disk flowers large and embraced by the hyaline and hooded bracts which are...hooded and lacerate at the tip...Disk akenes not developed but ray akenes dominating the heads...’).

*Status.* Not accepted in the current paper.

### Materials and methods

This revision is based on a morphological study of the holdings of the following herbaria: AD, BRI, CANB, DNA, HO, MEL, NE, NSW, NT and PERTH. Loans from most of these herbaria (excluding NSW) were obtained in 2003 and 2004. A supplementary loan of recent collections (including duplicates from other herbaria) was obtained from DNA in late 2011. Some NSW material has been studied during visits to that herbarium in 2010 and 2011. The senior author visited K and G in 2012 and examined extra material there. All illustrations were produced by the senior author, using a camera lucida to establish proportions and sizes. Material cited below as photo! from various herbaria was seen as on-line photographs only, either from the herbaria themselves or via JSTOR Plant Science.



### Taxonomic treatment of the Australian taxa

***Eclipta* L., *Mant. Pl.* 157 (1771).**

*Ecliptica* Kuntze, *Revis. Gen. Pl.* 1: 334 (1891), *orth. var.*

*Type:* *E. erecta* L., *nom. illeg.* [≡ *E. alba* (L.) Hassk., = *E. prostrata* (L.) L.], *typ. cons.*

Annual or perennial *herbs*; *stems* usually weak, procumbent, annual. *Leaves* simple, opposite, linear to lanceolate or elliptic, 3-veined (sometimes obscurely), sessile to shortly petiolate, base round to attenuate, entire to minutely toothed, pilose, with 2-celled hairs seated on a cluster of tiny epidermal cells. *Capitula* solitary or in dichasial clusters in the upper leaf axils, radiate; *involucral bracts* in 2 series, ±equal, herbaceous; *receptacle* paleaceous; *paleae* very narrowly linear, keeled, sparsely pilose, sometimes absent from central florets. *Ray florets* in several series, pistillate or sterile; ligules narrow, usually 2-lobed, white or yellow; *disc florets* bisexual, fertile, with corolla 4-lobed. Immature *achenes* smooth; mature achenes slightly dimorphic, oblong, tuberculate, ray achenes ±3-angled, others 4-angled, angles sometimes thickened and cartilaginous, or winged; *pappus* a membranous cup, sometimes produced into 2–4 short, weak awns, rarely absent.

*Eclipta* species are characterised by being usually perennial herbs (persistent woody rootstock, weak, slender, annual stems), found in damp or boggy situations, often on stream and lake sides, and then facultatively semiaquatic, sending submerged stems out into free water, with vertical emergent flowering branches. The stems root adventitiously when in contact with soil or when submerged. The capitula are small, with involucral bracts lanceolate to ovate, herbaceous, in two series, and are solitary in the axils of the upper leaves (sometimes nodding), or borne in open dichasia on long peduncles. Paleae are present, at least among the outer florets, and are linear (almost filiform), pilose and persistent. The ray florets are usually in several series and can be numerous (50 or more), usually with relatively small and narrow ligules which are two-lobed, white or yellow. Disc florets are also numerous, but often fewer than the ray florets. The pappus on both kinds of florets is a short, membranous cup, sometimes weakly serrate, and sometimes produced into two to four short, often soft, teeth or awns. Achenes are cylindrical to compressed, two- to four-angled, usually rugose to tuberculate (rarely smooth), the lateral angles sometimes thickened and cartilaginous, or winged.

*Distribution.* A genus of six species, with a trans-Pacific distribution. Three species are native to South America, and two others to Australia. A sixth species, *E. prostrata*, is thought to be native to central and southern South America, but is now widespread as a weed in tropical and warm temperate regions worldwide. Why this species of *Eclipta*, and not others, has become weedy, is not clear. All have similar general morphology, lifeforms and habitat requirements. The weediness of *E. prostrata* may perhaps be linked to its copious production of seed. Capitula of *E. prostrata* usually contain up to 100 achenes, sometimes twice that number. Other species usually have capitula of about 30 achenes.

*Relationships.* Panero *et al.* (1999), in a molecular study based on chloroplast DNA restriction site data, found *Eclipta* to be basal to what they termed the wedelioid group, containing most of the genera with variously winged achenes and a pappus of persistent or caducous bristles arising from a short terminal crown. This group has its greatest diversity in the Neotropics, but with a few Australian native species and genera, including taxa of *Eclipta*, *Wollastonia*, *Pentalepis* and *Wedelia s. lat.* However, generic limits in this group are still fluid, Panero *et al.* (1999) observing that the wedelioid group is the least understood and most problematic of the Heliantheae. No phylogenetic studies have been carried out within *Eclipta*. On morphological grounds the South American (including *E. prostrata*) and Australian

taxa fall into two groups correlated with geography. The three endemic South American species have involucre bracts which are gradually rounded at the base while these bracts are pouched in the two Australian native species. *Eclipta elliptica* and *E. megapotamica* have relatively long pappus awns (but see note under *E. alatocarpa*, and note that the awns in *E. elliptica* are sometimes absent), while the Australian species and *E. prostrata* have short or no awns. On the other hand, the Australian *E. alatocarpa* shares its winged achenes with the South American *E. megapotamica*. *Eclipta prostrata* is somewhat intermediate between the winged- and unwinged-achene species in having achenes which are strongly flattened, with thickened cartilaginous lateral angles.

*Etymology.* From the Greek, *ekleipo* (to lack) as some species are without a pappus or achene wings.

### Key to the Australian species of *Eclipta*

1. Achenes with broad, erose wings..... **1. *E. alatocarpa***  
 1: Achenes wingless, with or without thickened cartilaginous margins  
 2. Ligules yellow; ray florets 8–12; upper leaves abruptly contracted basally;  
 involucre bracts pouched basally ..... **2. *E. platyglossa***  
 2: Ligules white; ray florets numerous; upper leaves gradually tapered to base;  
 involucre bracts rounded basally, not pouched ..... **3. *E. prostrata***

**1. *Eclipta alatocarpa*** Melville, *Trans. & Proc. Roy. Soc. S. Australia* 83: 77 (1960). *Type citation:* ‘South Australia: Arkaringa Ck., 12 miles [c. 19 km] N of Mt Barry Stn, 60 miles [c. 95 km] S of Oodnadatta’, *E.H. Ising* 3766, Aug. 30, 1955’ (*holo:* K 9768!; *iso:* AD n.v. CANB 318615!, K 9767! (and spirit collection K 31426.000), MEL 2196379!).

*Illustrations.* R. Melville, *Trans. & Proc. Roy. Soc. S. Australia* 83: 78 (1960); D.A. Cooke in J.P. Jessop & H.R. Toelken, *Fl. S. Australia* 4<sup>th</sup> edn, 3: 1435, Figure 644A (1986).

Decumbent annual *herb* (10–)30–40 cm tall; *stems* weak, scabrous to subglabrous. *Leaves* subsessile, distant, lanceolate, (15–)25–50 mm long, 5–12(–14) mm wide, entire or with few irregular tiny teeth, attenuate at the base, scabrous; hairs 0.4–0.5 mm long, semiappressed, with lower cell swollen. *Peduncles* 5–15 mm long. *Involucre bracts* 8–10, ovate, lanceolate or elliptic, striate, 5–6 mm long, scabrous. *Ray florets* 9–11; ligules yellow, obovate, c. 2 mm long. *Disc florets* 20–25, yellow. *Achenes* 4–6 mm long, 5–6 mm wide, obovate, papillose or rugose when mature; *ray achenes* with 3 flat erose wings fused apically into a castellated cup; *pappus* of several connate scales to 1 mm long, with 1 or 2 extended as short, soft spines; *disc achenes* similar but with 2 erose wings. (Figure 1)

*Selected specimens (13 examined).* NORTHERN TERRITORY: 15 miles [c. 21 km] E Lorne Creek, 15 July 1959, *G. Chippendale* 6405 (AD, BRI, MEL); Tobermory, 22 May 1972, *C. Dunlop* 2562 (AD, CANB, K, MEL); Andado Stn, 14 Apr. 1977, *P.K. Latz* 6781 (AD, CANB, DNA, MEL). SOUTH AUSTRALIA: near Eringa, 16 July 1997, *R. Bates* 47081 (AD [& BR, BRI, CANB, MEL, NT, RSA, S, all n.v.]); Algebuckina Waterhole, 9 Mar. 1984, *N.N. Donner* 9937 (AD); Gidi Giddinna Creek, 46 km NE Coober Pedy, 30 Apr. 1997, *D.E. Symon* 15668 (AD); Coober Pedy–Oodnadatta Rd, at the crossing of the Algebullcullia Creek, 30 June 2000, *D.E. Symon* 16210 & *J. Symon* (AD); Peake Creek, between William Creek and Oodnadatta, 10 Mar. 1983, *J.Z. Weber* 8922 (AD). QUEENSLAND: S. Oestrus, Gilruth Plains, 7 Mar. 1949, *K.C. Baker* G830 (CANB, K); 80 km SE of Waterloo HS, 28 June 1989, *A.J. Emmott* 266 (AD, BRI, K); Currawinya National Park, Paroo River floodplain S of Caiwarra ruins, 20 Mar. 1997, *P.I. Forster* 20511 & *M. Watson* (BRI, MEL).

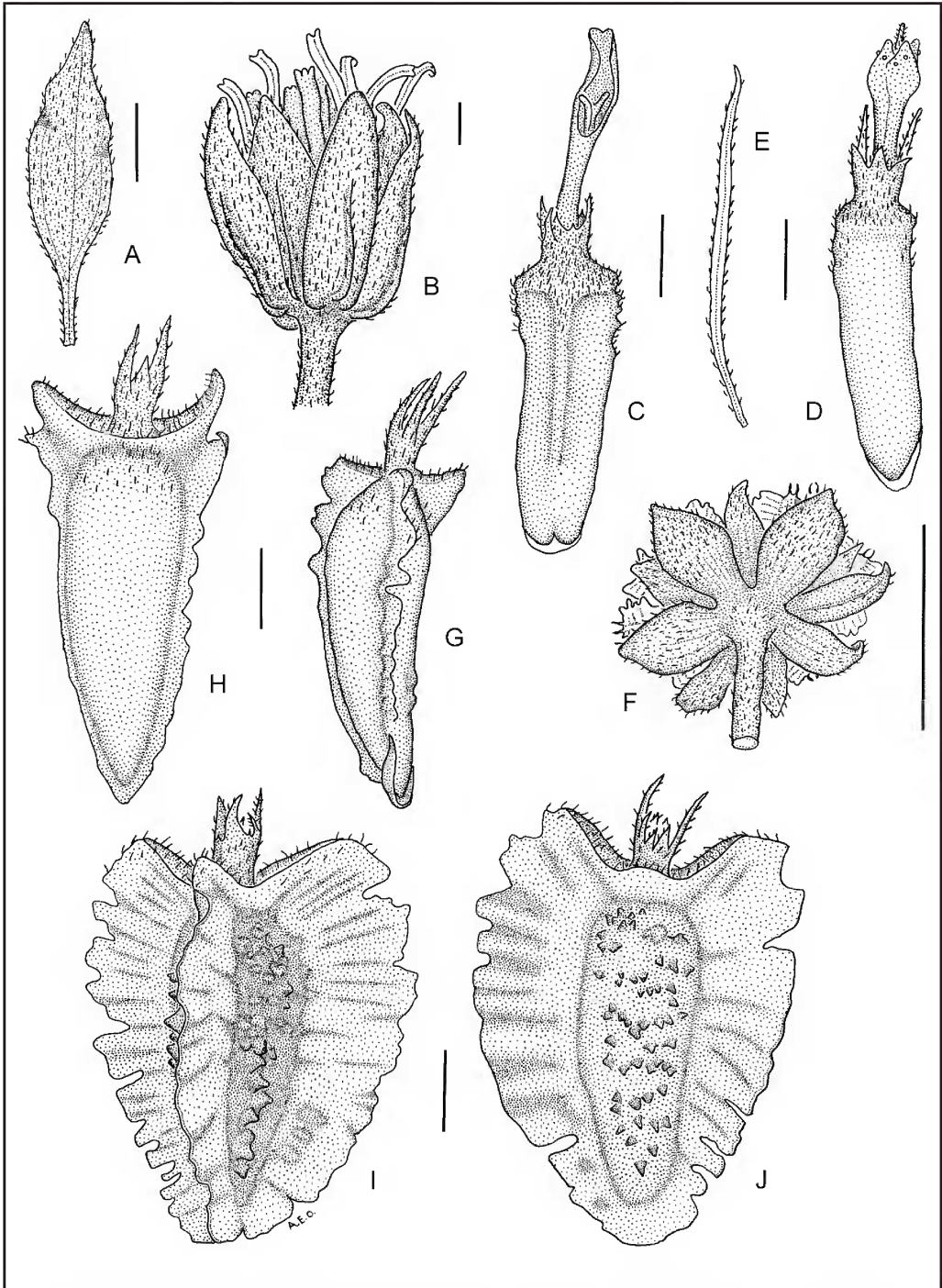


Figure 1. *Eclipta alatocarpa*. A – leaf; B – capitulum in flower; C – ray floret; D – disc floret; E – palea; F – capitulum in fruit, viewed from below; G – immature ray achene; H – immature disc achene; I – mature ray achene; J – mature disc achene. All based on *D.E. Symon* 15668, AD. Scale bars: A, F = 1 cm; B–E, G–J = 1 mm. © ABRIS, reproduced with permission.

*Distribution and habitat.* Endemic to inland Australia and restricted to scattered localities in South Australia, the Northern Territory and Queensland (but probably often overlooked) (Figure 2A). Grows in heavy soils (black cracking soils, clays, alluvium) in damp areas or locations subject to intermittent flooding, streamsides and floodplains.

*Flowering and fruiting period.* Flowers and fruits recorded March–August.

*Conservation status.* Widespread in inland localities, including at least two National Parks, but rarely collected, possibly overlooked. Equivalent to IUCN (2001) Data Deficient.

*Etymology.* From the Latin *alatus* (winged) and the Greek *carpos* (fruit), referring to the winged achene.

*Typification.* There are two type sheets of this species in K, one (K 9768) labelled holotype, the other (K 9767) labelled isotype (plus some flowers in spirit, K 31426.000). Normally, one of these sheets would be chosen as the lectotype. This is not necessary in this case. K 9768 bears only a handwritten label, and must be the material on which Melville based his description. It is thus correctly labelled holotype. K 9767, in addition to a handwritten label in Ising's hand, bears a typed label prepared in AD, in which the material is described as an isotype, and a reference to Melville's publication is included. As this must have been prepared post-publication, the material was not available to Melville, and is thus correctly labelled as an isotype.

*Affinities.* This is the only annual species of *Eclipta* in Australia. The winged achenes of *E. alatocarpa* are shared with *E. megapotamica* of South America, but the wings in the latter are narrower, not fused apically into a cup, the body of the achene in *E. megapotamica* is smooth, and the 'awns' are longer. It should be noted that the awns in these two species are anatomically different, and analogous not homologous. The awns in *E. alatocarpa* (and all other species of *Eclipta*) are anatomically elongated scales, and thus true pappus awns, albeit weak. Those in *E. megapotamica* are extensions of the wing apices, arising from the body of the achene, the true pappus consisting of a ring of tiny scales.

*Notes.* The illustration of '*Eclipta alatocarpa*' in the *Flora of Central Australia* (Jessop 1981: 381) is *E. prostrata*.

**2. *Eclipta platyglossa*** F.Muell., *Fragm.* 2: 135 (1861). *Type citation:* 'Per amplos Novae Hollandiae extratropicae tractus; sic ad flumina Yarra Yarra, Avoca, Murray, Darling, ad sinus littorales St. Vincent's Gulf et Moreton Bay, alibique' (*lectotype*, designated here: Avoca, Dec. [18]53, *Dr. M[ Mueller ] s.n.*, MEL 2217443; *residual syns:* River Darling, *s. dat.*, *Dallachy & Goodwin s.n.*, MEL 2217447; St Vincent's Gulf, *s. dat.*, [*F. Mueller s.n.*], MEL 2217449; Moreton Bay, *s. dat.*, [*F. Mueller s.n.*], MEL 2217446; Murray River, *s. dat.*, *D[allachy] s.n.*, MEL 2217441).

*Wollastonia ecliptoides* F.Muell., *Pl. Victoria Lithograms*, legend to t. 39 (1865), *nom. illeg.*, *nom. superfl.*

*Wedelia ecliptoides* F.Muell., *Pl. Victoria Lithograms*, legend to t. 39 (1865), *nom. inval.*, *pro syn.*

*Eclipta erecta auct. non L.:* O.W. Sonder, *Linnaea* 25: 482 (1852), based on specimen [S.A.]: 'in umbrosis ad ripam fl. Torrens', Jan., *Herb. F. Mueller s.n.* (specimen not located).



Prostrate or ascending slender perennial *herb* (5–)20–30 cm tall, *stems* with short appressed hairs, prostrate, rooting at nodes *Leaves* subsessile, distant, narrowly lanceolate to linear, 15–50(–80) mm long, 2–7 mm wide,  $\pm$ entire or with few tiny scattered teeth, abruptly contracted at the base, surfaces appressed-pilose; hairs 0.3–0.8 mm long, appressed or semierect, lower cell swollen or not. *Peduncles* 5–40 mm long. *Involucral bracts* 8–10, lanceolate, sparsely hairy, weakly striate, 3–4 mm long, pilose, pouched at base. *Ray florets* 8–12; ligules yellow, oblong. *Disc florets* 8–15, yellow. *Achenes* 2–3 mm long, 1 mm wide, cylindrical, yellow-brown to purple-black, densely rugose when mature; ray achenes  $\pm$ 3-angled, disc achenes  $\pm$ 4-angled, otherwise similar; *pappus* absent or a minute cup with irregularly ciliolate margins.

*Distribution.* An endemic Australian species, of which two subspecies can be distinguished, one mainly southern temperate to subtropical, the other northern tropical.

*Common names.* Yellow Twin Heads, Yellow Eclipta.

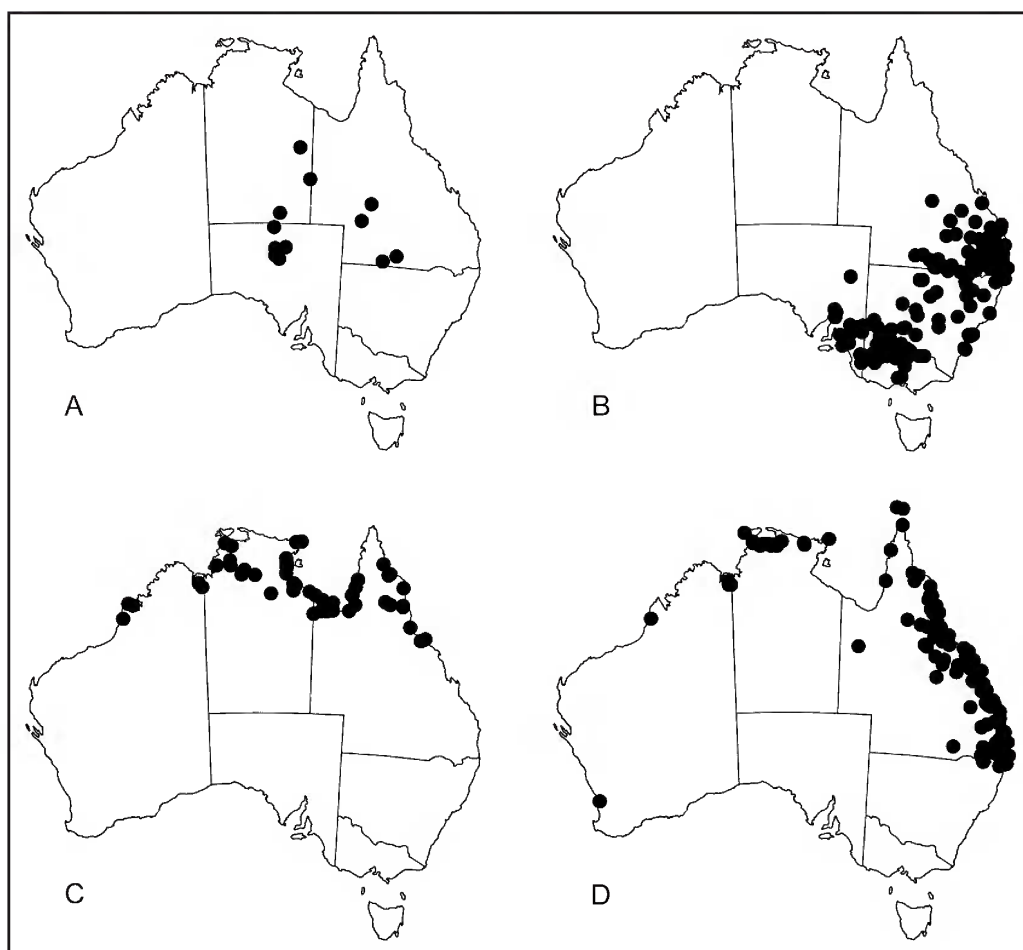


Figure 2. Distribution of the various *Eclipta* taxa in Australia. A – *E. alatocarpa*; B – *E. platyglossa* subsp. *platyglossa*; C – *E. platyglossa* subsp. *borealis*; D – *E. prostrata*.



*Affinities.* This species differs from the introduced *E. prostrata* in lacking cartilaginous thickened margins on the achene, in having leaves which are abruptly contracted at the base, in its yellow florets, and in having capitula with *c.* 20–30 florets (rather than *c.* 50 up to 200). The paleae in *E. platyglossa* are found mainly subtending the outer florets, absent from the central ones, while in *E. prostrata* most florets have a palea. In addition, the involucre bracts in *E. prostrata* are gently curved at the base, while those of *E. platyglossa* are distinctly pouched.

### Key to subspecies of *Eclipta platyglossa*

Two subspecies are recognised.

1. Leaves appressed-pilose; hairs soft, fine throughout; ligules *c.* 1 mm long; hairs on involucre bracts sparse, mainly marginal ..... **2a. *E. platyglossa* subsp. *platyglossa***
- 1: Leaves semierect-pilose; hairs stiff, with swollen basal cell; ligules *c.* 2 mm long; hairs on involucre bracts moderately dense, dorsal and marginal ..... **2b. *E. platyglossa* subsp. *borealis***

### 2a. *Eclipta platyglossa* subsp. *platyglossa*

*Illustrations.* F. Mueller, *Pl. Victoria Lithograms*, t. 39 (1865); G.M. Cunningham, W.E. Mulham, P.L. Milthorpe & J.H. Leigh, *Pl. W. New South Wales* 666 (1981).

*Leaves and stems* appressed-pilose, the hairs fine, without swollen bases. *Involucre bracts* sparsely hairy, with hairs mostly marginal. *Ray floret ligules* *c.* 1 mm long,  $\pm$ equal in length to involucre. *Pappus* on mature achenes absent or a minute cup to 0.1 mm long; *awns* rarely present on mature achenes. (Figure 3A–L)

*Selected specimens (c. 350 examined).* SOUTHAUSTRALIA: Walkers Flat, 3 Mar. 1964, *E.N.S. Jackson* 590 (AD, MEL); shores of Millbrook Reservoir, 11 Mar. 1962, *D.E. Symon* 2074 (AD); Wiela Stn opposite Chowilla, 9 May 1987, *D.E. Symon* 14342 (AD, CANB); *c.* 6 km S of Blanchetown, 19 Mar. 1973, *J.Z. Weber* 3409 (AD). QUEENSLAND: Warrego Hwy, 22 km NW of Dalby, 20 Mar. 1994, *A.R. Bean* 7616 (BRI); Turner Creek, 11.9 km N of Dalveen, 26 Jan. 1995, *A.R. Bean* 8211 (BRI, MEL, NSW); Burraburri Creek, 16 km W of Durong, 7 May 1992, *P.I. Forster* 9837 (BRI, MEL). NEW SOUTH WALES: Girilambone, Jan. 1900, *W. Baeuerlen s.n.* (AD, BRI, CANB, HO, MEL); 0.4 km S of Gurley Creek, on Moree–Narrabri road, 5 Jan. 1996, *A.R. Bean* 9490 (BRI); Tealmoy Waterhole, 5 Nov. 1987, *Peter G. Wilson* 148 & *D.I. Wilson* (CANB, MEL, NSW). VICTORIA: Little Piccaninny Creek, Dingee, 9 Nov. 1947, *F. Robbins* ACB38707 (MEL); Piangil, *c.* 40 km NW of Swan Hill, *R.V. Smith* 71/26 (AD, BRI, HO, K, MEL); Serendip, Lara, 21 Mar. 1963, *F. Swindley* 1559 (MEL).

*Distribution and habitat.* Widespread in Queensland, New South Wales, Victoria and South Australia, south of latitude *c.* 23° 20' S (Figure 2B). Found on heavy clay soils in damp situations (swamps, river flats, seepage areas) in grassland and woodland, at altitudes from sea-level to at least 470 m asl.

*Flowering and fruiting period.* Flowers and fruits recorded in all months.

*Conservation status.* Widespread and not at risk.

*Etymology.* From the Greek *platys* (broad) and *glossa* (tongue), referring to the size of the ligule, large in comparison to *E. prostrata*, the only other species recorded for Australia at the time.

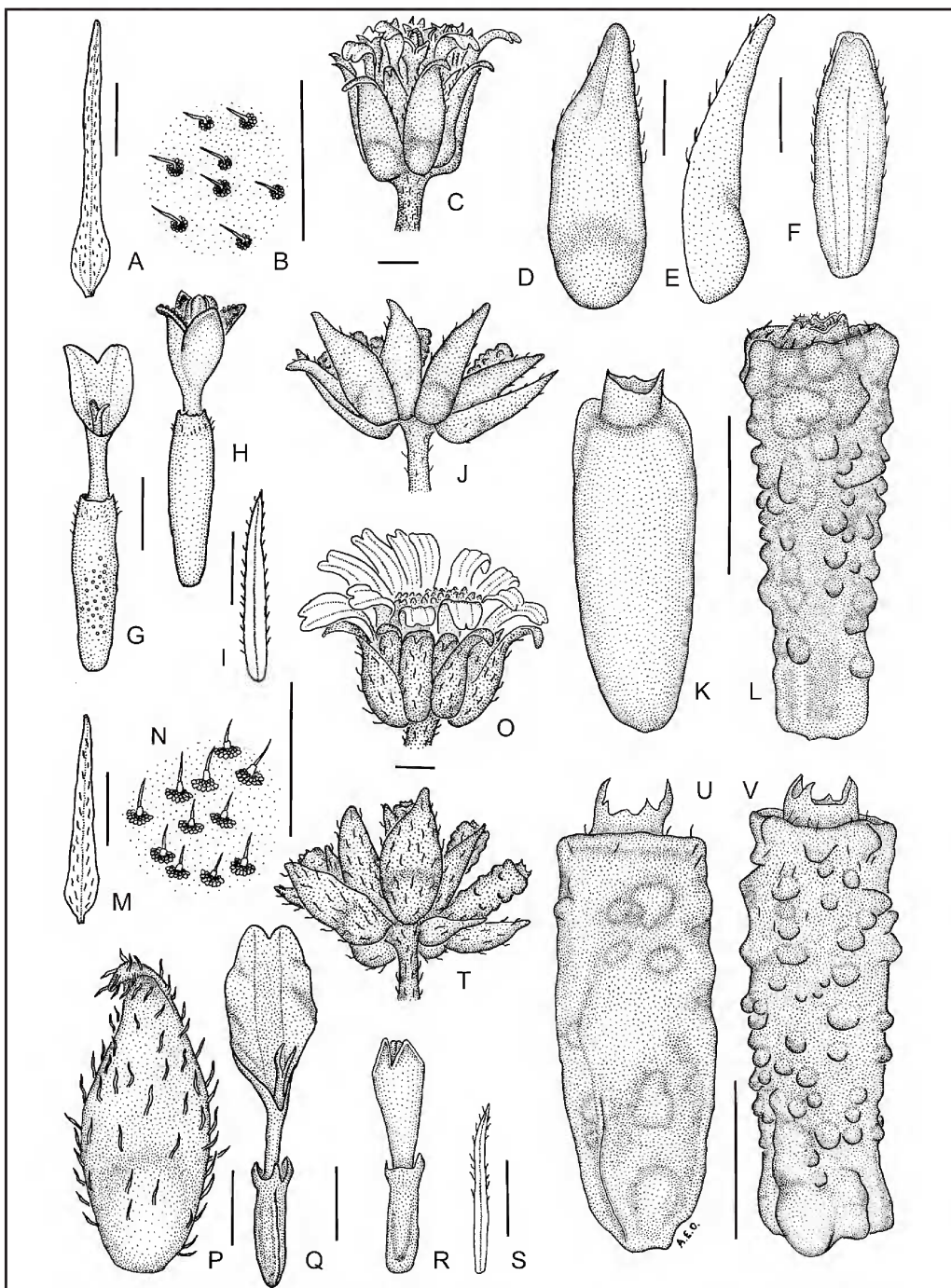


Figure 3. *Eclipta platyglossa*. A–L. subsp. *platyglossa*. A – leaf; B – appressed hairs on upper leaf surface; C – capitulum in flower; D – outer involucre bract; E – lateral view of outer involucre bract; F – inner involucre bract; G – ray floret; H – disc floret; I – palea; J – capitulum in fruit; K – immature achene; L – mature achene. M–V. subsp. *borealis*. M – leaf; N – erect hairs on upper leaf surface; O – capitulum in flower; P – outer involucre bract; Q – ray floret; R – disc floret; S – palea; T – capitulum in fruit; U – immature achene; V – mature achene. A–L based on *A.R. Bean* 8211, MEL; M–V based on *H.S. McKee* 8360, CANB. Scale bars: A, M = 1 cm; B–L, N–V = 1 mm. © ABRIS, reproduced with permission.

**2b. *Eclipta platyglossa* subsp. *borealis* E.W.Cross & Orchard, *subsp. nov.***

*Typus*: Fishfarm Road, c. 15 km east from Kununurra, Western Australia, 21 August 2000, *A.A. Mitchell* 6348 (*holo*: PERTH 6225217!; *iso*: CANB 571344!, DNA *n.v.*).

*Eclipta* ‘Humpty Doo entity’, *sensu* C.R. Dunlop, in I.D. Cowie, P.S. Short & M. Osterkamp Madsen, *Floodplain Flora* 184 (2000).

*Eclipta* sp. Humpty Doo (H.S. McKee 8360), *sensu* R.A. Kerrigan & D.E. Albrecht (eds), *Checklist N. Terr. Vasc. Pl. Sp.* [unpag.] (2007).

*Illustrations*. M.E. Lawrence in J.R. Wheeler (ed.), *Fl. Kimberley Reg.* 935, Figure 286N, 939, Figure 287I (1992), as *E. platyglossa*; C.R. Dunlop in I.D. Cowie, P.S. Short & M. Osterkamp Madsen, *Floodplain Flora* 185, Figure 36 (2000), as *Eclipta* ‘Humpty Doo entity’.

*Leaves* and *stems* semierect-pilose, the hairs coarse, with basal cell swollen. *Involucral bracts* moderately densely pilose, with similar hairs, both marginal and dorsal. *Ray floret ligules* c. 2 mm long, usually exceeding the involucre. *Pappus* on mature achenes a short cup to 0.3 mm long, often with 2–4 short, deltoid awns or teeth. (Figure 3M–V)

*Selected specimens* (c. 80 examined). WESTERN AUSTRALIA: Dampier Peninsula, Pender Bay at Weedong Lake, 22 June 1984, *S.J. Forbes* 2446 & *K.F. Kenneally* (MEL); 1 km N of main road to Disaster Bay, 35 km ENE Beagle Bay Mission, 7 May 1985, *J.B. Martin* 21 (CANB, PERTH); E end of billabong in front of Carlton Hill Station HS about 70 km N of Kununurra, 29 July 1994, *A.A. Mitchell* 3732 (PERTH). NORTHERN TERRITORY: Islands, Carpentaria, 1802–1805, *R. Brown* [Bennett no. 2112] (K); Dalywoi Bay, c. 10 km SSE of Yirrakala, 21 May 1996, *I. Cowie* 6964 (DNA, MEL); Calvert River mouth, 6 June 1987, *P.K. Latz* 10467 (DNA); Gove, 22 Aug. 1948, *R.L. Specht* 960 (AD, BRI, CANB). QUEENSLAND: Walsh River, c. 500 m upstream of Mungana–Wrotham Park road, 7 Feb. 1980, *J.R. Clarkson* 2777 (BRI, DNA, QRS); 11.5 km N of Bizant Ranger Base, Lakefield National Park, 27 May 1993, *V.J. Neldner* 4035 (BRI); Sweers Island, 18 Nov. 2002, *M.B. Thomas* SWI 112 & *L. Pedley* (BRI, DNA).

*Distribution and habitat*. Widespread in northern Western Australia and the Northern Territory, north of latitude 19° 40’ S (Figure 2C). Found on heavy clay soils in swamps, marshes, drainage channels, and margins of pools, in grassland and woodland, including *Pandanus* swamp and the margin of salt flats and mangroves, at altitudes from sea-level to at least 400 m asl.

*Flowering and fruiting period*. Flowers and fruits recorded February–August.

*Conservation status*. Widespread and not at risk.

*Etymology*. From the Greek *boreis* and Latin *borealis* (northern): this subspecies is confined to northern tropical Australia.

*Affinities*. This subspecies is distinguished from subsp. *platyglossa* particularly by its coarser, longer, denser hairs, longer ligules, and by its leaves having a midrib more deeply sunken above and prominent below. It is geographically separated from the former by several degrees of latitude. However in other respects, especially leaf shape, flower and fruit characters, it closely resembles the typical subspecies, and is best considered distinct at subspecies rather than species level.

**3. \**Eclipta prostrata*** (L.) L., *Mant. Pl.* 286 (1771). *Verbesina prostrata* L., *Sp. Pl.* 2: 902 (1753). *Type citation*: ‘Habitat in India’. *Lecto*: the plate: *Chrysanthemum maderaspatanum, menthae arvensis*.... in L. Plukenet, *Phytographia*, t. 118, f. 5, (1691), chosen by D.O. Wijnands, *Bot. Commelins* 74 (1983).

*Verbesina alba* L., *Sp. Pl.* 2: 902 (1753). *Eclipta erecta* L., *Mant. Pl.* 286 (1771), *nom. illeg., nom. superfl.* *Eclipta alba* (L.) Hassk., *Pl. Jav. Rar.* 528 (1848). *Eclipta alba* var. *erecta* (L.) Miq., *Fl. Ned. Ind.* 2(1): 95 (1856). *Type citation*: ‘Habitat in Virginia, Surinamo’. *Lecto*: Herb. Linn. No. 1020.1 (LINN), photo!, chosen by W.G. D’Arcy, *Flora of Panama* (Family 184. Compositae), *Ann. Missouri Bot. Gard.* 62: 1102 (1975).

*Eclipta* sp. Perth (S. Lloyd s.n. 3/4/1998), *sensu* G. Paczkowska & A.R. Chapman, *W. Austral. Fl. Descr. Cat.* 161 (2000).

*Eclipta* sp. Gove (J.L. Egan 2784), NT Herbarium *sensu* R.A. Kerrigan & D.E. Albrecht (eds), *Checklist N. Terr. Vasc. Pl. Sp.* [unpag.] (2007).

*Illustrations.* A.L. Cabrera, *Fl. Prov. Buenos Aires* 4: 201, Figure 56 (1963), as *E. alba*; D.L. Nash, Heliantheae in *Fl. Guatemala, Fieldiana* 24(12): 521, Figure 66 (1976); H.E. Kleinschmidt & R.W. Johnson, *Weeds of Queensland* 382 (1977); T.D. Stanley & E.M. Ross, *Fl. SE Queensland* 2: 562, Figure 78A (1986); C.R. Dunlop in I.D. Cowie, P.S. Short & M. Osterkamp Madsen, *Floodplain Flora*, 185, Figure 36 (2000), as *Eclipta* ‘Gove entity’, and *E. prostrata*; R.P. Wunderlin & B.F. Hansen, *Atlas of Florida Vascular Plants* (2008) (<http://www.florida.plantatlas.usf.edu/Plant.aspx?id=3677>, accessed 20 June 2012); US Forest Service, Pacific Island Ecosystems at Risk (PIER) ([http://www.hear.org/pierspecies/eclipta\\_prostrata.htm](http://www.hear.org/pierspecies/eclipta_prostrata.htm), accessed 20 June 2012).

Erect or decumbent perennial *herb* (facultatively semiaquatic), (15–)30–60(–100) cm tall; *stems* weak, scabrous, rooting adventitiously when prostrate or submerged. *Leaves* ±sessile, distant, lanceolate, narrowly ovate or elliptic, variable in size, usually 20–65(–170) mm long, (2–)5–20(–40) mm wide, gradually tapered to base, entire to shortly and irregularly dentate, both surfaces appressed-pilose; hairs 0.4–0.6 mm long, slender throughout. *Peduncles* 1–7 cm long. *Involucral bracts* 8–10, ovate (outer) to lanceolate (inner), striate, 3–4 mm long, appressed-pilose. *Ray florets* numerous (30–70); ligules white, linear, 1–2 mm long, usually 2-lobed (some unlobed). *Disc florets* numerous (30+) white. *Achenes* 2.0–2.3 mm long, 0.8–1.0 mm wide, compressed-cuneate, weakly 3- or 4-angled, strongly tuberculate, with 2 cartilaginous margins, scattered hairs at apex; *pappus* absent or a minute ciliate cup with 2 or 3 soft tooth-like awns. (Figure 4)

*Selected specimens Australia* (c. 300 examined). WESTERN AUSTRALIA: Broome garden, 18 June 1997, C. Brockway 166B (PERTH); near Riverton Bridge, Canning River, Wilson, 16 Mar. 1998, B.J. Lepschi 3880 & T.R. Lally (CANB, PERTH); banks of Canning River, Liege St., Cannington, 23 May 1998, S. Lloyd s.n. (AD, CANB, BRI, MEL, PERTH); 25 km from Kununurra, 17 July 1992, A.A. Mitchell 2630 (CANB, PERTH). NORTHERN TERRITORY: Nhulunbuy Lagoon, Gayngaru Walk, 16 Oct. 1993, J.L. Egan 2784 (DNA); Fogg Dam, 24 Nov. 1998, J. Risler & R.A. Kerrigan 25 (DNA); Oenpelli, 25/26 Sep. 1948, R.L. Specht 1063 (BRI, CANB, MEL, PERTH). QUEENSLAND: 1 km N of Daintree Ferry crossing, 29 Feb. 1996, B. Gray 6537 (QRS); Boyne River near junction with Derrarabungy Creek, c. 25 km S of Mundubbera, 11 July 1996, W.J. McDonald 6195 & D.J. Baumgartner (BRI); c. 7 km WSW of Moura, 16 June 1999, A.B. Pollock 733 & M. Edington (AD, CANB, NSW). NEW SOUTH WALES: Lismore Dam, 11 Nov. 1971, N.C.W. Beadle s.n. (NE); Tuckean Island, W of Wardell, 2 Apr. 2001, A.R. Bean 17572 (BRI); Moore Park, 1.6 km N of Old Grevillia, 4 Sep. 1973, R. Coveny 5132 (BRI, CANB, K).



*Selected specimens extra-Australia (38 examined).* PORTUGAL: Salwatera de Magos, 24 Sep. 1958, *F. Fontes* 270 (CANB). RWANDA: Kigali, 26 Feb. 1958, *G. Troupin* 6560 (CANB). OMAN: Zeak, 26 Oct. 1981, *J.R. Maconochie* 2917 (CANB). DIEGO GARCIA (BIOT): Point Marianne, 24 May 1979, *A. Field* 161 (CANB). IRAQ: Baghdad Liwa, 15 Nov. 1958, *S. Agnew & A.D.Q. Agnew* 191 (CANB). CHINA: Jiangxi Prov., Shahe, 13 Oct. 1995, *C.-M. Tan* 95860 (CANB). PHILIPPINES: White Beach, Leyte, 5 May 1957, *G.M. Frohne* PNH35142 (CANB). INDONESIA: E Java, Kudus, c. 1930, *C.S. Backer* 816 (CANB); Timor, Fatunnasi, Soe, 14 Jan. 1975, *H. Wiradinata* 410 (CANB). PAPUA NEW GUINEA: Kunini village, 6 May 1986, *J. Simaga* 679 (CANB). HAWAII: Halalii Lake, 1 Apr. 1949, *H. St. John* 23653 (CANB). UNITED STATES OF AMERICA: Louisiana, Audubon Park, New Orleans, 20 Nov. 1949, *J. Ewan* 18276A (CANB). BAHAMAS: Thompson Boulevard, New Providence Is., 27 Sep. 2000, *E. Freid* 00-361 (CANB). PANAMA: David airport, 14 Dec. 1966, *W.H. Lewis et al.* 772 (CANB).

*Distribution and habitat.* A pantropical and warm temperate weed; a presumed native of South America. In Australia, widespread in Queensland, the Northern Territory and north-east New South Wales; in Western Australia rare in the Kimberley and near Perth (Figure 2D). The earliest record of this species in Australia is from the Brisbane River (*F. Mueller s.n.*, July 1855 and Dec. 1856, MEL). By 1865–66 it was known from Rockhampton (*A. Dietrich s.n. & 891*, MEL), by 1869 from Mackay (*A. Dietrich* 2463, MEL), and by the 1870s–1890s from Port Darwin (*Holtze s.n.*, MEL). Found in wet areas (floodplains, drainage lines, lake and river margins), on heavy clay soils, at altitudes from sea-level to at least 1000 m asl. When growing near stagnant water, it facultatively sends submerged, adventitiously rooting shoots out into the water, and from these are produced erect, emergent flowering branches.

*Flowering and fruiting period.* Flowers and fruits recorded in all months.

*Conservation status.* Widespread and not at risk.

*Etymology.* From the Latin *prostratus*, (prostrate) referring to its annual, weak, sprawling stems arising from a perennial, woody rootstock.

*Common name.* White Eclipta.

*Notes.* Leaf size in this species is very variable. Plants growing in swampy conditions can have leaves 9–17 cm in length, whereas most collections have leaves 2–6.5 cm long. One of these large-leaved forms was given the phrase name *Eclipta* sp. Perth (S. Lloyd s.n. 3/4/1998), based on a collection by S. Lloyd from Cannington. Similarly, the plant provisionally referred to as *Eclipta* sp. Gove (J.L. Egan 2784) from the Northern Territory is also merely a minor morphological variant of this species. This variation has led to the description of many local variants worldwide, all now included in a very extensive synonymy. See, for example, GCC (Flann 2009–) which contains c. 100 synonyms of *E. prostrata*.

The illustration of ‘*Eclipta alatocarpa*’ in the *Flora of Central Australia* (Jessop 1981: 381) is *E. prostrata*.



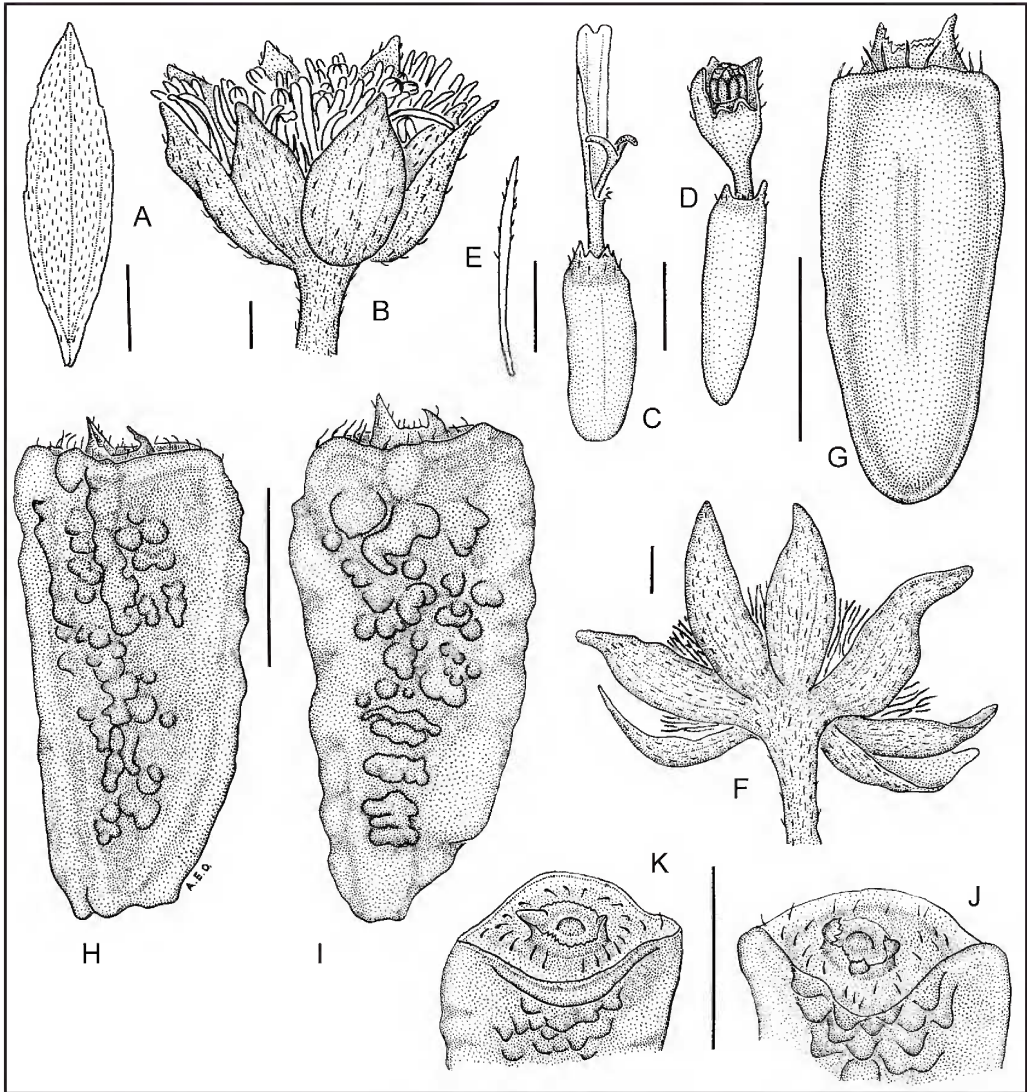


Figure 4. *Eclipta prostrata*. A – leaf; B – capitulum in flower; C – ray floret; D – disc floret; E – palea; F – capitulum in fruit, viewed from below; G – immature disc achene; H – mature ray achene; I – mature disc achene; J – oblique view, apex of ray achene; K – oblique view, apex of disc achene. All based on *A. Fraser* 353, CANB. Scale bars: A = 1 cm; B–K = 1 mm. © ABRS, reproduced with permission.

### The South American endemic species

The following brief descriptions are provided in order to provide comparative data for extra-Australian species, but as they are based on a combination of literature sources and very limited specimens, should not be considered comprehensive. Synonymy only includes those names for which authentic material has been examined. For a more complete synonymy see GCC (Flann 2009–).

**Eclipta elliptica** DC., *Prodr.* 5: 491 (1836). *Type citation*: ‘in Brasiliae prov. Rio-Grande. (v.s. in h. Mus. reg. Par. ex h. Mus. imp. Bras. n. 1024).’ (*holo*: Brésil. Province de Rio-Grande. (Herbier Impèrial du Brésil No. 1024), *C. Gaudichaud s.n.*, 1833, P 2534514 photo!).

*Eclipta peduncularis* J.Rémy, in C.Gay, *Fl. Chil.* 4(1): 113 (1849). *Type citation*: ‘Se cria igualmente in las provincias del norte [Gay].’ (*iso*: Chile, *C. Gay s.n.* (K 487528 ex herb. Paris!); Chili, 1839, *C. Gay s.n.* (P 2534517 photo!)).

*Illustrations*. J.G. Baker in C.F.P. von Martius, *Fl. Brasil.* 6(3): t. 56(II) (1884); J. Arechavaleta, *Fl. Uruguay* 3: 319, Tab. LXV (1906).

Perennial, often prostrate, *herb* 30–50 cm tall; stems sparsely pilose. *Leaves* subsessile, distant, elliptic, (10–)20–30 mm long, 8–10 mm wide, entire, long-attenuate at base, obtuse, sparsely pilose; hairs appressed, on multicellular swollen bases. *Peduncles* 40 mm long. *Involucral bracts* *c.* 8, lanceolate to narrowly ovate, weakly longitudinally veined, 6 mm long, sparsely pilose. *Ray florets* numerous (*c.* 25 or more), in 2 series; ligules white to creamy white, *c.* 2 mm long, 0.7 mm wide. *Disc florets* numerous (*c.* 20), white to creamy white. *Achenes* 3 mm long, 2 mm wide, oblong, trigonous (ray achenes) or quadrangular (disc achenes), yellow-brown, smooth or becoming slightly rugose; *pappus* absent or of 2 short awns. (Figure 5A–L)

*Specimens examined*. URUGUAY: Montevideo, Oct. 1858, *M. Gilbert* 49 (K); Pocitos/Malvin, Nov. 1924, *G. Herter* 76231 (K); *loc. cit.* 9 Dec. 1924, *G. Herter* 70203 (K); Montevideo, 1826–30, *Capt. King s.n.* (Voyage of *Adventure & Beagle*), (K). BRAZIL: Prov. Rio Grande do Sul, 1816–21, *St Hilaire* C2/1779 & 2216 (P 2533513 & 2534512 photos!). ARGENTINA: Prov. Buenos Aires, Campana, 27 Nov. 1938, *W.J. Eyerdam & A.A. Beetle* 23099 (K); Prov. Buenos Aires, 77 km SE of La Plata, 9 Dec. 1938, *W.J. Eyerdam et al.* 23397 (K).

*Distribution and habitat*. Found in Brazil, Uruguay, Paraguay, Argentina and northern Chile, in semishaded grassy habitats in heavy moist loam.

*Flowering and fruiting period*. Flowers present October–November; fruits November–December.

*Etymology*. From the Latin *ellipticus* (elliptical), referring to the blunt, elliptical leaves, as opposed to the acute, lanceolate leaves of the more common *E. prostrata*.

**Eclipta leiocarpa** Cuatrec., *Revista Acad. Colomb. Ci. Exact.* 9: 240 (1954). *Type citation*: ‘Colombia, Dep. Cundinamarca: San Antonio de Tena, alrededores del puente sobre el río Bogotá, 1400–1500 m. alt. Hierba higrófila, flor blanquecina. Colect. 10-III1940 *J. Cuatrecasas* 8255 (Holotypus F).’ (*holo*: F 49427F photo!; *iso*: COL 4912 photo!).

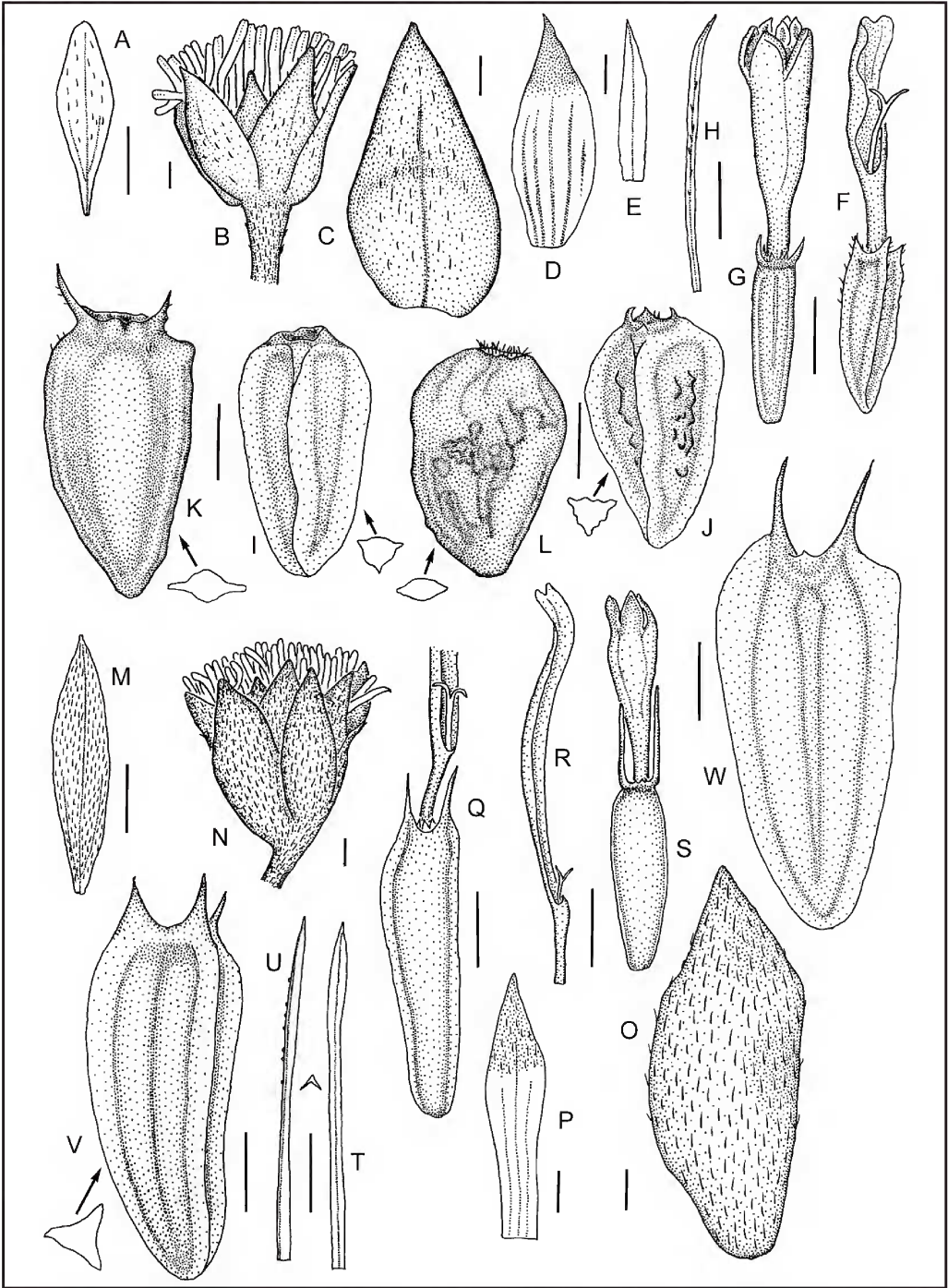


Figure 5. Endemic South American species of *Eclipta*. A–L. *Eclipta elliptica*. A – leaf; B – capitulum in flower; C–E involucre bracts, outer to inner; F – ray floret; G – disc floret; H – palea; I, J – ray achenes; K, L – disc achenes. M–W. *Eclipta megapotamica*. M – leaf; N – capitulum in flower; O – outer involucre bract; P – inner involucre bract; Q – ovary of ray floret; R – corolla of ray floret; S – disc floret; T – palea dorsal view; U – palea lateral view; V – ray achene; W – disc achene. A–L based on *G. Herter* 76231, K; M–W based on [*F. Sello* 2504, K. Scale bars: A, M = 1 cm; B–L, N–W = 1 mm.

Erect *herb*; *stems* sparsely pilose. *Leaves* subsessile, distant, lanceolate, 100 mm long, 35 mm wide, coarsely serrate, long-attenuate at base, acute, sparsely pilose; hairs appressed, on swollen bases. *Peduncles* 20–30 mm long. *Involucral bracts* 8 or 9, ovate or oblong-ovate, with *c.* 9 distinct longitudinal veins, 3.5 mm long, glabrous. *Ray florets* numerous, in 2 series; ligules white, linear, *c.* 2 mm long. *Disc florets* numerous, white. *Achenes* only developing from disc florets, *c.* 2 mm long, 1 mm wide, oblong, quadrangular, silvery grey, smooth; *pappus* absent (achenes pilose apically).

*Specimens examined.* Only on-line photographs of the holotype and isotype have been seen.

*Distribution and habitat.* A species so far only recorded from Colombia. Described as hygrophilous.

*Flowering and fruiting period.* Flowers and fruits present in March.

*Etymology.* From the Greek *leios* (smooth) and *carpos* (fruit).

***Eclipta megapotamica*** (Spreng.) Sch.Bip. ex S.F.Blake. *Verbesina megapotamica* Spreng., *Syst. Veg.* 3: 578 (1826). *Type citation:* ‘ad fl. magnum Amer. Austr. (rio Grande). *Sello.*’ (*possible type: Verbesina megapotamica*, [F.]Sello (‘Sprgl! herb. 1946’), ex herb. Schultz Bip., ex herb. E. Cosson (P 2534364 photo!)).

*Eclipta lanceolata* DC., *Prodr.* 5: 491 (1836). *Type citation:* ‘in Brasiliae prov. Rio-Grande. (v.s. in h. Mus. reg. Par. ex h. Mus. imp. Bras. sub n. 1007.’ (*holo:* Brésil, Province de Rio-Grande, 1833, *C. Gaudichaud s.n.* (Herbier Impérial de Brésil n. 1007) (P 2534365 photo!)).

*Eclipta lanceolata* var. *longifolia* Baker, in C.F.P. von Martius, *Fl. Brasil.* 6: 171 (1884). *Type citation:* ‘Habitat prope Montevideo: Arechavaleta n. 4113, *Sello* n. 2498.’ (*syn:* Montevideo, en los Cariados ..., Diciembre 1876, *Arechavaleta* 4113 (K 487529! & 487530!)).

*Illustrations.* J.G. Baker in von C.F.P. von Martius, *Fl. Brasil.* 6 (3): t. 56(I) (1884), as *E. lanceolata*; A.L. Cabrera, *Fl. Prov. Buenos Aires* 4: 203, Figure 57A–C (1963).

Erect or procumbent perennial *herb* 30–60 cm tall; *stems* sparsely pilose. *Leaves* subsessile, distant, lanceolate to narrowly ovate, 30–50(–80) mm long, 10–15 mm wide, entire, long-attenuate at base, acute, appressed-pilose; hairs fine, each seated on a ring of tiny cells. *Peduncles* 100–160 mm long. *Involucral bracts* *c.* 15, lanceolate to narrowly ovate, midrib present, 8–9 mm long, appressed-pilose. *Ray florets* numerous, in 2 series, ligules creamy white (sometimes described as ‘amarillo’), linear, 2–3 mm long. *Disc florets* numerous, creamy white. *Achenes* 4(–6) mm long, 2 mm wide, oblong, 3-angled (ray achenes) or 2-angled and compressed (disc achenes), with a narrow yellowish wing on angles, extended apically into 2 or 3 short awns; body of achenes dark brown, smooth, glabrous; *pappus* absent or of 1 or 2 very short lobes between awns. (Figure 5M–W)

*Specimens examined.* URUGUAY: Rio del Plata, Mar. 1890, *J. Arechavaleta* 51 (K). BRAZIL: Brasilia, [F.]Sello 2502 (K); Brasilia, Passo do [?Jauny], Bankado, *Sello* 2504 (K); Barra de Sta Lucia, Oct. 1876, *M. Fruchard s.n.* (P 2534359 photo!); Rio Grande do Sul, Porto Alegre, zwischen Navegantes und Saõ Joaõ, 2 Dec. 1897, *E.M. Reineck & J. Czermak* 154 (P photo!); Province de Rio Grande do Sul, 1816–1821, *A. de St Hilaire* 2667 (P photo!).



*Distribution and habitat.* Found in southern Brazil, Uruguay and north-eastern Argentina, in the catchment of the Rio Grande, in damp, humid communities, probably among grasses.

*Flowering and fruiting period.* Flowering and fruiting in December–March.

*Etymology.* From the Greek *me-gas* (big) and *potamos* (river), meaning from the Rio Grande.

*Notes.* Specimens seen during this study appeared to have white or creamy white florets, but Arechavaleta (1906) and Cabrera (1963) described them as ‘amarillas’, i.e. yellow.

### Summary key

The following key serves to distinguish the six species of *Eclipta* worldwide, as recognised in this paper.

1. Florets yellow
  2. Achenes winged, smooth or rugose; involucre bracts pouched or not pouched at base
    3. Wings narrow, produced into short awns apically; body of achene smooth; involucre bracts not pouched at base ..... **E. megapotamica**
    - 3: Wings broad, forming a castellated cup apically but lacking awns; body of achene rugose; involucre bracts weakly pouched at base..... **E. alatocarpa**
  - 2: Achenes unwinged, ±cylindrical, rugose; involucre bracts pouched ..... **E. platyglossa**
- 1: Florets white
  4. Achenes winged ..... **E. megapotamica**
  - 4: Achenes not winged
    5. Leaves entire or almost so; achenes brown to yellow-brown; involucre bracts with, at most, 1 or 3 indistinct longitudinal nerves
      6. Leaves blunt, elliptic ..... **E. elliptica**
      - 6: Leaves acute, usually lanceolate or ovate, rarely elliptic..... **E. prostrata**
    - 5: Leaves coarsely toothed; achenes silvery grey; involucre bracts ovate to oblong-ovate with c. 9 distinct longitudinal nerves ..... **E. leiocarpa**

### Acknowledgements

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